

THORNBURY (F. J.)

A new combination
sterilizer x x x x





A NEW COMBINATION STERILIZER
FOR ASEPTICIZING SIMULTANEOUSLY
WATER, INSTRUMENTS, AND DRESSINGS.

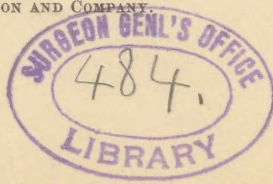
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THIS apparatus is designed to meet the requirements of the general practitioner as well as the specialist in surgery, obstetrics, and gynaecology.

It consists of a boiler (*B*) in which the water is sterilized, a tray (*C*) containing soda solution in which the instruments are sterilized, and an upper chamber (*E*) for sterilizing the dressings.

The steam for the latter is generated in a jacket of water (*A*), which envelops the lower boiler and upper instrument tray. The dressing chamber is provided with double walls separated by a space a few centimetres in width, and corresponding to the outer water compartment below. Through the upper intervening space steam ascends from the water jacket to enter, through a line of perforations, the inner chamber *at the top*. Hot air passes up around the dressings through the outermost space (*K*), so they are warmed before the steam encounters them. The water jacket extends from the bottom of the water boiler on all sides upward to the top of the instrument tray. It has drain (*I*) and inlet pipe (*G*) attached. The inner walls of the water jacket form the walls of the boiler for sterilized water on four sides and below. Resting into the

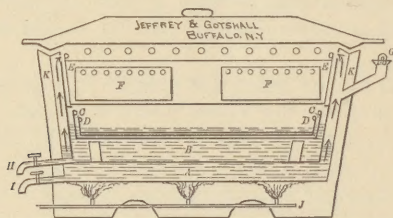


boiler above is the shallow instrument tray with soda solution. The cover of the tray is formed by the bottom of the removable chamber for dressings above.

In the latter are contained two sub-compartments (*FF*)—small closed boxes—with two rows of perforations in the top and bottom, left open for entrance of steam while the dressings are sterilizing, afterward closable to preserve them uncontaminated. The communication between the top of the jacket and the outer steam compartment of the upper chamber is direct; in fact, what is the water jacket below corresponds with the outer steam space above. The steam, after permeating and traversing the dressings, gauze, cotton bandages, etc., contained in the boxes in the upper chamber, escapes through a vapor pipe at the side into the open air, or may, in case of an apparatus of large proportions, be conducted through a coil of lead pipe to be condensed in a vessel of cold water.

Supply and drain pipes are provided to the water boiler so that it may be filled, or sterilized water drawn off, as desired.

The whole apparatus is closed at the top by a tightly fitting cover which sets into a water seal around the periphery.



A, water jacket; *B*, water boiler; *C*, s. d. tray; *D*, instrument tray; *E*, upper steam chamber; *F*, boxes for dressings; *G*, supply pipe to boiler; *H*, tap to sterilized water boiler; *I*, faucet to water jacket; *J*, gas supply pipe; *K*, hot-air chamber.

A thermometer for registering the temperature in the steam chamber projects through the cover in the center. The temperature will be found to be uniformly 100° C. in the steam chamber and 104° C. or more in the boiling water and soda. The apparatus is heated by means of a gas pipe (*J*) running

underneath and containing a number of jets so that the heat may be distributed over as great an extent of surface as possible. Owing to the compactness of the apparatus, its comparatively small size, and the provision for rapid heating, the entire sterilizing process occupies but a short time.

The water and soda are boiled in three to five minutes—the instruments sterilizing in the soda—the upper chamber is filled with steam in twelve minutes, and in twenty-eight minutes the dressings are sterilized.

Two boxes of dressings may be sterilized at one time, and in the intervals a quantity sufficiently large to last for a number of operations, so that, in case of emergency and want of time, only a delay of about ten minutes is occasioned. This short time for sterilizing the instruments and water may be made to occupy the interval of details preliminary to the operation.

The dressings, after having been asepticized, are removed in the small boxes (no secondary handling and contamination being permitted) and allowed to dry out, although there has not been much saturation through condensation, owing to the dressings having been warm before the steam encounters them. They set directly over and rest upon a tray of hot soda solution. Secondly, the steam is generated rapidly, is *saturated* and under considerable tension, and consequently has not much tendency to condense on the articles.

To cause evaporation of any moisture that may have occurred, however, and dry thoroughly the dressings so they may be preserved for future use, hot air may be passed through them in a manner to be hereafter described. The dressings, having been sterilized and dried, keep aseptic indefinitely in the tightly closed boxes. One of the latter may be taken by the surgeon to cases in private practice, sterile gauze being thus constantly at hand. In using this combination sterilizer,* first the boiler is filled with water; second, a one-per-cent. soda solution is placed in the tray, and in the latter the instruments are submerged in a shallow wire basket (*D*). Next the boxes are filled with dressings (leaving the cover and bottom orifices open) and

* Obtainable from Jeffrey & Gotshall, Buffalo, N. Y.

set into the sterilizing chamber. Water is now allowed to flow from the hydrant to fill the jacket, and then the gas is turned on. After the sterilizing process is completed the water is drawn from the jacket through a faucet at the side, and water from the hydrant is allowed to course through around the sterilized water in the boiler, cooling it for immediate use. The instruments have been sterilized in the soda which has boiled, and are now taken out and set into a tray containing a cold solution of carbolic acid and soda, one per cent. each. The gas flame allowed to continue generates dry heat (the jacket being empty), which takes the same course to dry the dressings as the steam did in sterilizing them. This constitutes the apparatus and its working complete.

I desire to express my thanks to Mr. Charles Jeffrey, of, Jeffrey & Gotshall, and also to Mr. D. McAvoy, draughtsman, for valuable aid and suggestions in perfecting my design. I am indebted to Mr. Jeffrey for its execution.

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